

December 2, 1873.

Dr. A. Günther, F.R.S., Vice-President, in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the months of October and November 1873:—

The total number of registered additions to the Society's Menagerie during the month of October 1873 was 111, of which 3 were by birth, 45 by presentation, 25 by purchase, 21 by exchange, and 17 were received on deposit. The total number of departures during the same period by death and removals was 129.

The most noticeable additions during the month of October were as follows:—

1. Two of the smaller variety of the Patagonian Conure, received in exchange Oct. 13th.

This smaller and brighter form of this Parrot, found in Mendoza and other States of the Argentine Republic, would appear to be best entitled to the name *patagonus*, that name having been founded by Vieillot on Azara's description of specimens seen at Buenos Ayres. The larger form of Chili and the west coast may be called *Conurus byroni* (J. E. Gray), if, as proposed by Finsch, *cyanolyseos* of Molina be rejected as inadmissible.

We have examples of both forms now living in the Parrot-house.

2. Two Sand-badgers (*Meles ankuma*, Temm. Fauna Japon. Mamm. p. 30, pl. 6), presented by Lieut. the Hon. A. C. Littleton, of H.M.S. 'Salamis,' Oct. 26th.

Mr. Littleton writes to me that he procured these animals in the mountain-district of Japan, about 70 miles north of Jeddo. Of the two only specimens of this species already received by the Society in 1865 one is still living in the Society's Gardens.

3. A Collared Jay Thrush (*Garrulax picticollis*, Swinhoe, P. Z. S. 1872, p. 554), received from the Jardin d'Acclimatation of Paris, Oct. 30th. I have never seen a living example of this scarce and interesting species before.

The total number of registered additions to the Society's Menagerie during November 1872 was 63, of which 3 were by birth, 35 by presentation, 15 by purchase, 4 by exchange, and 6 were received on deposit. The total number of departures during the same period by death and removals was 123.

The most noticeable additions were as follows:—

1. Twelve Terrapins obtained at Bussorah, and presented Nov. 10th by Capt. Phillips, of the S.S. 'Mesopotamia.'

These Terrapins belong undoubtedly to the species lately described and figured by Dr. Günther in the Society's 'Proceedings' as *Emys grayi** (P. Z. S. 1869, p. 504, pl. xxxviii.). But Mr. Blanford informs me that he has lately identified this species as being the true *Tes- tudo caspica* of Gmelin. It must therefore be called *Clemmys caspica*.

* The same specific title had been previously given by Strauch (Verth. d. Schildkr. p. 88) to the *Batagur picta* of Gray; and another *Emys grayi* has since been described by A. Duméril and Bocourt in the 'Report of the French Scientific Commission in Mexico,' Rept. and Batrach. p. 13.

2. A sharp-snouted Badger (*Meles leptorhynchus*) and two small rodents, presented by Mr. R. Swinhoe, F.Z.S., H.B.M. Consul at Chefoo. Received Nov. 14th.

The Chinese Badger is new to us, and of much interest. It has been described and figured by A. Milne-Edwards*. The rodents Mr. Swinhoe sends as examples of the Mongolian Souslik (*Spermophilus mongolicus*, A. Milne-Edwards).

Mr. Sclater made remarks on a fine head of *Alcelaphus tora* †, which Mr. Edwin Ward had sent for exhibition. This animal had been



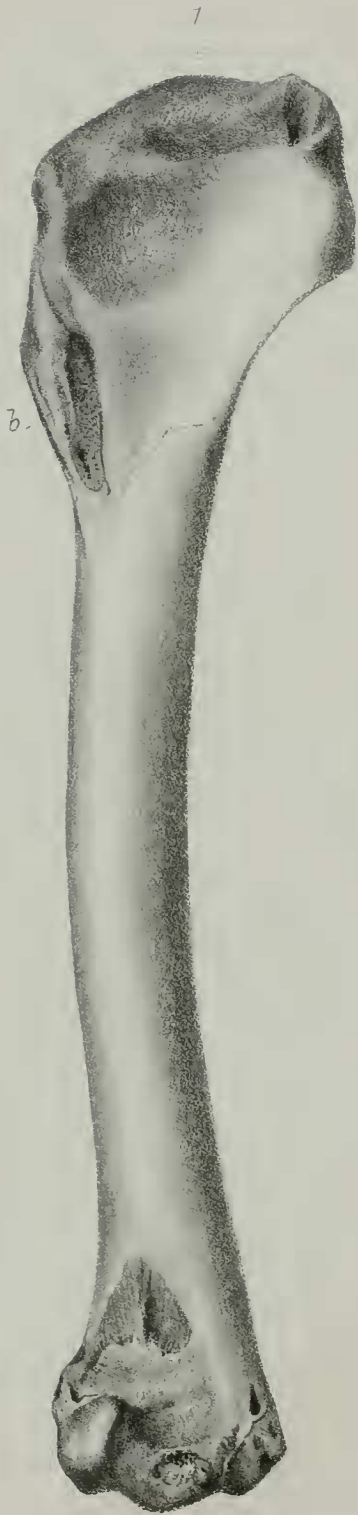
Head of *Alcelaphus tora*.

obtained by Mr. C. L. Arkwright, of Savile Row, during a recent shooting-excursion on the Settite in Upper Nubia. According to Mr. Arkwright this Antelope is the commonest large Antelope in the country, and is the *Tétel* of Sir S. Baker, who, like other travellers, has confounded it with the Bubal (*Alcelaphus bubalis*) ‡.

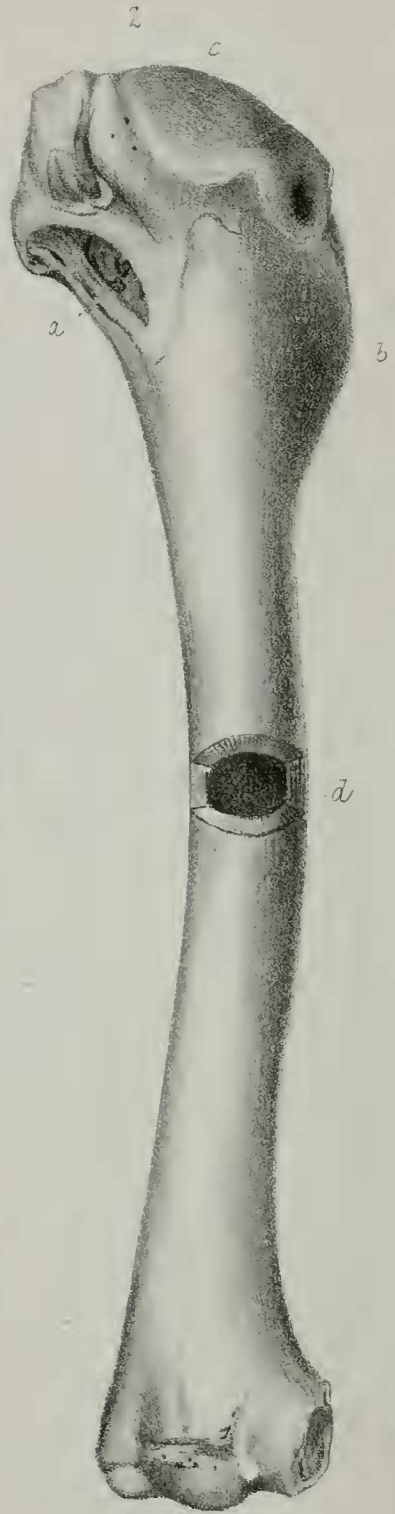
* Recherches pour servir à l'Hist. des Mammifères, pl. 17.

† See above, p. 729. ‡ See 'Nile Tributaries' (new edition), 1872, p. 132.





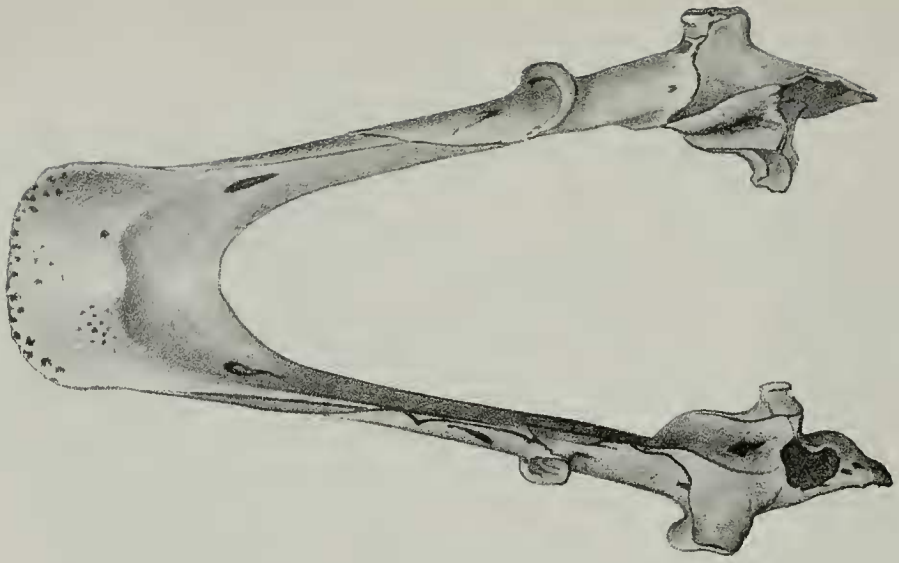
J. Smit lith



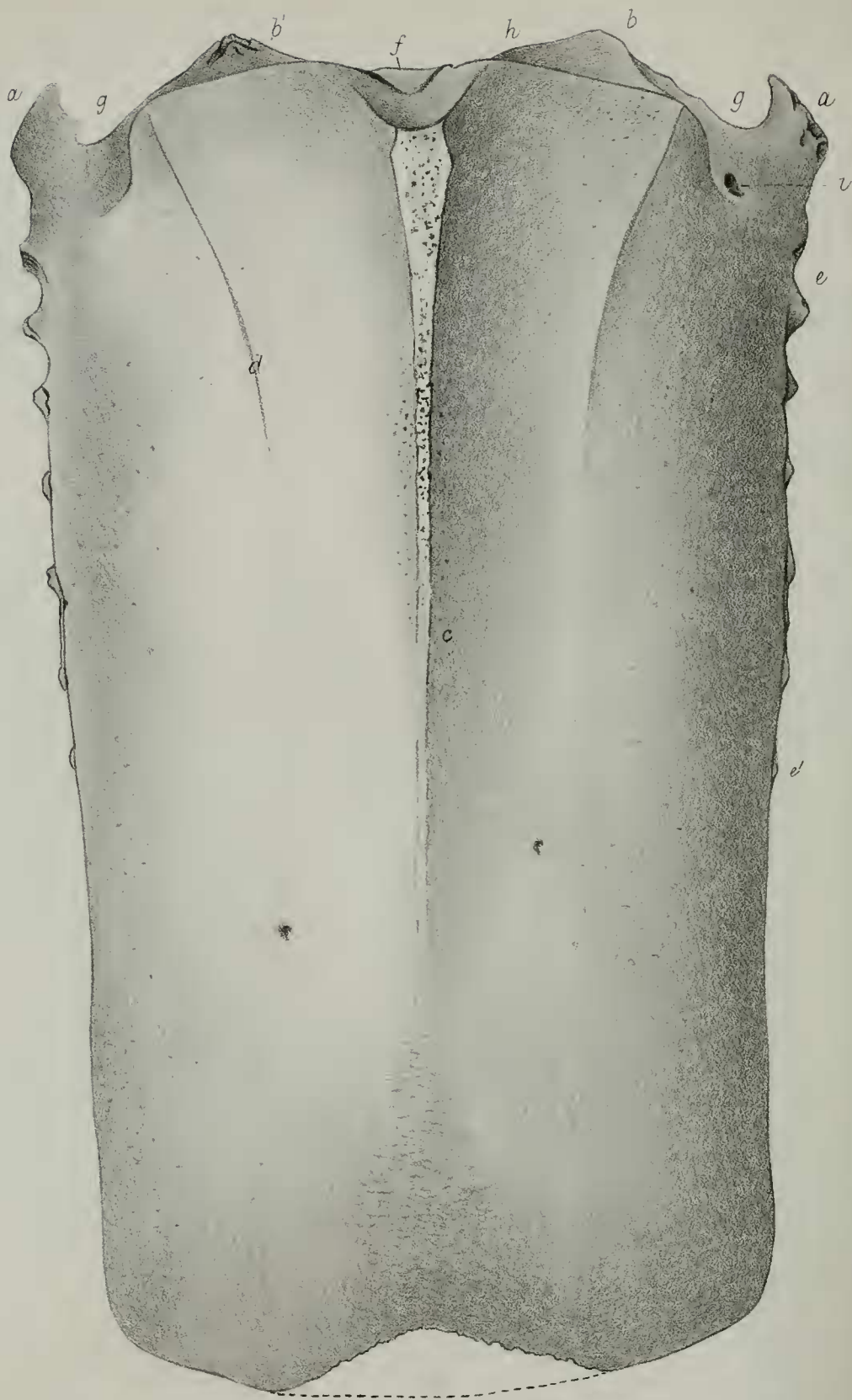
M & N Hanhart imp

HUMERUS OF CNEMIORNIS CALCITRANS.

2



SKULL OF CNEMIORNIS CALCITRANS



J. Smith lith.

M & N. Hanhart imp

STERNUM OF CNEMIORNIS CALCITRANS.

Prof. Owen read the twentieth of his series of memoirs on the extinct birds of the genus *Dinornis* and their allies. This contained a restoration of the skeleton of *Cnemiornis calcitrans*, and gave remarks on its affinities with the Lamellirostral group.

This paper will be published in the Society's 'Transactions.'

The following papers were read:—

1. On *Cnemiornis calcitrans*, showing its Affinity to the Natatores. By JAMES HECTOR, M.D., F.R.S.

(Plates LXV.—LXVIII.)

[Received October 16, 1873.]

Since the discovery of the very interesting specimen of the Moa's neck* with well-preserved muscular tissue and integument, in the Earnsleugh Cave in the interior of the Province of Otago, the locality has been visited several times, and especially in February of last year by the Hon. Capt. Fraser, who obtained, besides Moa-bones, several belonging to a smaller-sized bird †, being part of a skeleton, most of which had been previously removed by some gold-diggers. I recognized these to belong to *Cnemiornis calcitrans*, Owen ‡, the only difference being that the humerus (Plate LXV.) differs from that described by Professor Owen in several important characters. Besides the humerus were the right femur and tarso-metatarsus, and the metacarpal bones, the two former agreeing accurately with Professor Owen's description and plates, and the last-mentioned being a new addition to the osteology of the bird.

The chief difference observed in the humerus (Plate LXV. 1, 2, 3) is its greater proportional size, being equal in length to the femur instead of one ninth less, and its having a very distinct pneumatic fossa (Plate LXV. fig. 2 a) closed by a cribriform bony septum. In addition, the tuberosity (b) representing the pectoral ridge is not so wide; and the proximal articular surface (c) is slightly broader and more convex at its middle part than in the typical bone. These characters led to its being suspected to belong to a carinate bird; but the massiveness of the bone was, I thought, sufficient to disprove this. In order to determine this point with some degree of accuracy I compared the weight with the bulk of the same bone in several species of birds, with the following results:—

	Weight.	Bulk.
1. <i>Cnemiornis</i> (Earnsleugh Cave)	10	244
2. Weka (<i>Ocydromus</i>), non-volant	10	210
3. Kakapo (<i>Stringops</i>), non-volant	10	187
4. Kaka (<i>Nestor</i>), volant	10	131
5. Hawk (<i>Hieracidea</i>), volant	10	126

A small portion of the shaft was also removed (Plate LXV. fig. 3),

* Trans. N. Z. Inst. vol. iv. p. 110, pl. v.

† *Ibid.* vol. v. pp. 102 & 417.

‡ Trans. Zool. Soc. vol. v. p. 395.

and the thickness of the bony wall found to be so great that the internal diameter is only two thirds that of the external.

In consequence of the divergence of character from the humerus described by Professor Owen, I was much interested in obtaining the remainder of the bones of this skeleton; and after tracing it through several hands, Captain Fraser at last succeeded, only a few weeks ago, in obtaining possession of the box containing the bones in the same state in which they had been found, and handed them over to me for description on the 20th ultimo.

The skeleton is still far from complete; but the following bones are in a very admirable state of preservation, and agree perfectly in appearance, colour, peculiar stains, texture, and other external characters; so that there is no reason to doubt that they all belong to one individual, which is further confirmed by the study of their anatomical characters:—

- | | |
|---------------------------------------|-----------------------|
| 1. Skull. | 7. Sacrum. |
| 2. Vertebrae (12 cervical, 4 dorsal). | 8. Femur. |
| 3. Sternum. | 9. Tibia. |
| 4. Furcula. | 10. Tarso-metatarsal. |
| 5. Humerus. | 11. Ribs (6). |
| 6. Carpal. | |

The structure and form of the skull and sternum show that this bird belongs to the Lamellirostrate Natatores, but that the power of flight had become obsolete, and that it differs from most others of the duck-kind in its short lofty head, very solid palate, and in the peculiar character of the tympanic cavity, which is bridged across by a bony process between the mastoid process and the basioccipital. The great solidity of the skull, and the absence of occipital fontanelles, and the free sutures of the naso-frontal and the lachrymal bones are also remarkable.

Every bone of the skeleton, excepting the upper part of the sternum, has the close-grained reticulated surface which is so characteristic of the bones of *Cnemiornis*, giving the impression of a very solid powerful framework that in the fresh state would contain much oily matter; and the absence of the power of flight is evidenced by the rudimentary tubercular ridge that represents the keel, and the small area included by the pectoral ridges on the surface of the sternum.

Skull. (Plates LXVI. and LXVII.)

What remains of the skull is well preserved, every process being sharp and distinct as in a freshly macerated specimen; but unfortunately the following appendages have been lost:—the quadrate, jugal, pterygoid, and lachrymal bones. The head, including the lower jaw, and allowing the usual proportion for the quadrate, would have the height equal to two thirds the length, and the transverse diameter equal to half the length.

The brain-case is short, high, and compressed laterally, its postero-inferior diameter being greatest. The nasal portion of the skull, which is distinctly shorter than the cranial, is detached; and the

mobility of the upper mandible, which in such birds is usually effected by the flexibility of the thin nasal bones, must, if it existed, have been effected by a straight joint with thick irregular margins, somewhat as in the Parrot.

In the occipital region the muscular ridges are moderately developed. The condyle (1) moderate, reniform, flattened, and excavated, with a mesial notch above, slightly excavated beneath, but not laterally.

The foramen is very large, being one third the height of the occiput in its vertical diameter, which is one fourth greater than the transverse. It is rounded above, but has the lateral and inferior margins almost straight. The occipital area is rather square in form, with a blunt mesial ridge, having a shallow pit on either side, but no fontanelles. A bold paroccipital process (4) extends downwards and backwards on each side, and forms the extremity of the cranium in that direction, giving rise to the most remarkable feature in its external conformation as viewed laterally. A deep perforated pit separates this process from the basioccipital, which is very largely developed, and has two inferior lateral processes separated by a wide, smooth, subcondyloid notch, and then extends forwards as a broad, slightly concave surface which occupies a large area of the base of the skull (Plate LXVII. fig. 2. 1''). The basisphenoid (5) has a small share in the base of the skull, and has large oval basiptyergoid facets (5') only slightly divergent.

The character presented by the tympanic fossa is very remarkable, as it is divided into a posterior and anterior orifice by a quadrate ossicle (*ms.*) that connects the tip of the mastoid process with the basioccipital and with the anterior process of the exoccipital, thus enclosing a wide canal descending obliquely backwards and outwards with a subcircular aperture deeply notched inferiorly. The articular portion of the cavity with its two facets is thus separated from the posterior or auricular portion—a character which appears to be unique, and the converse of the præmastoid arch which exists in *Aptornis*. This is shown in the oblique perspective sketch which has been made for me by Mr. Nairn:—



Side view of skull of *Cnemionis*.

The frontal bone (11) is slightly swollen at the vertex, and depressed between the orbits, which have strong overhanging orbital processes, on which are rough, deeply impressed areas (Plate LXVII. *d*), which probably gave attachment to a posterior excrescence of the cere as in *Plectopterus*, these impressions being separated by a smooth groove with only a faint mesial ridge. There appears to have been a deep notch (*d'*) in the upper part of the orbital border; but, the lachrymal bones having been lost, this is not very certain. The width of the nasal suture is equal to the length of the attachment of the lachrymals, which extends from the groove to the transverse suture (*g*).

The interorbital septum is complete; and there are well-ossified rhinal chambers, with very minute olfactory foramina that proceed direct from the cranial cavity. The roof of the orbit is flat, with a very slight glandular groove. The optic foramen is at the posterior and inner angle of the orbit, directly above the front of the basipterygoid facet. Behind the postorbital process is a deep imperforate pit. The brain-cavity extends six lines anterior to the optic foramen.

The upper mandible has all its elements completely fused; the large nostrils (Plate LXVII. fig. 1, *e*) occupy more than half the superior sloping area, their aperture being directed outwards, forwards, and upwards, rounded in front and angled behind; and they are separated by a smooth bony interspace (*f*), which is one fourth the width of the mandible. The tip is rounded, with a tumid area for the attachment of the horny mandible, the length of which is equal to its width. Interiorly the palatal plate is flat, with deeply incurved borders, notched on each side of the tip; but it is deeply excavated by a longitudinal groove (Plate LXVII. fig. 2, *h*) which is perforated by two well-defined apertures, the one (*h'*) large and directed upwards, and the other (*h''*) small, directed backwards in a line with the groove. The palatines are firmly united posteriorly with the vomer, the upper surface of which has a slight groove to receive the præspenoid.

The lower mandible (Plate LXVI. fig. 2) is stout, but broad and compressed in every part, the rami preserving a lamellate structure throughout, and being united by a broad symphysis, the length of which is equal to one fourth of the mandible, the anterior half being flat and the posterior excavated. Inferiorly the punctate surface of the attachment of the horny mandible covers the whole of the symphyseal portion.

Pelvis.

This bone agrees with Professor Owen's description so far as his imperfect specimen enabled him to fix its characters; but the complete preservation of the bone obtained from the Earnscleugh Cave enables me to add the following:--

The neck of the ischium is compressed to form the inferior notch, which is 9 lines in diameter, and contracted posteriorly to 5 lines. The ischium then expands to 8 lines, with a concave external surface,

its upper margin being united with the ilium for the last two inches, forming a rhomboidal convex plate with a squamous posterior margin that descends obliquely backwards. The inferior margin is produced, and has been united by cartilage to the pubic styles for about 6 lines. The latter are attached by a stout compressed process to the inferior fifth of the acetabulum, and thence produced backwards as a narrow curved bone, flat externally, and with a strong ridge internally, 3 lines wide at its narrowest part, and posteriorly expanding into a flat curved process that descends at an obtuse angle, and continues the squamous edge of the posterior pelvic aperture. The coccygeal bone is wanting; the first sacral vertebra is ankylosed to the sacrum only by its spinous process.

The posterior roof of the pelvis is pierced by eight foramina in almost parallel lines an inch apart, separated by a concave interspace anteriorly, and a convex ridge posteriorly, the rhomboidal form of the area being produced by a blunt expansion of the border, which on either side overhangs the antetrochanteric process.

Sternum. (Plate LXVIII.)

This bone is almost perfect, having lost only a few lines of its inferior margin; and though it differs considerably from the characters attributed to it by Professor Owen, this is without doubt due to his not having had a connected fragment of the superior portion of the bone, so that its enormous posterior concavity was not appreciated. It is chiefly remarkable for its irregular oblong shape, without any irregularities of outline or unossified interspaces. Its texture is dense, and, with its great size, gives it a weight equal to that of the femur.

Its general form is scaphoid, the concavity being very marked in the upper half, amounting to 1 inch in depth measured from a transverse chord, and to $1\frac{1}{2}$ inch in depth if measured from a longitudinal chord, the length of the latter being 7 inches. The anterior width at the costal processes (*a*) is 4 inches, and at the posterior end of the costal border 3 inches 6 lines. The costal border (*e-e'*) occupies half the lateral margin of the bone, the posterior half of the bone being only slightly concave interiorly, and exteriorly being flat in the middle, and sloping very slightly to the inferior angles. The superior margin is thin, and presents a wide mesial notch (*f*) and two lateral notches (*g*), which are bounded exteriorly by the costal processes, which project backwards and upwards for 6 lines. The coracoid grooves (*b* and *b'*) are 1 inch 6 lines in length, and 2 lines in depth of anterior border; they are separated by a slight triangular interspace 5 lines wide, beneath which is a shallow triangular pit. The keel (*c*) commences by two angular ridges bounding this pit posteriorly, and forms a blunt process 3 inches in length, expanded anteriorly to a rough tubercular surface 4 lines in width and 9 in length, and then compressed into a narrow tubercular ridge that is gradually lost in the smooth convex surface of the bone at less than one half the distance from its superior margin. The greatest elevation of the keel above the convex surface of

the bone is less than 3 lines. The impression (*d*) for the attachment of the pectoral muscle extends from the exterior angle of the coracoid notch towards the posterior part of the keel, including a triangular area which occupies only one sixth of the exterior surface of the bone, showing the extremely limited and feeble attachment of the third muscle of flight. Large pneumatic foramina exist in the interior of the bone at the upper angles, and one (*i*) on the exterior surface on the left side only.

Furcula. (Plate LXVII. fig. 3.)

The clavicles are completely joined into a smooth, slightly compressed furcula like that of the Swan, except that the antero-posterior curvature is confined to the articular processes, which diverge 1 inch above the general plane, and are expanded, with a large pneumatic foramen (*a*) on the internal surface, overhanging which is a triangular cotyloid surface (*b*). The coracoids have not been found, but must have been stout triangular bones 2 inches in length, and $1\frac{1}{2}$ inch wide at the sternal attachment. The scapula also is wanting.

Vertebræ.

The following vertebræ have been found:—the third, fourth, seventh, eighth, ninth, tenth, thirteenth, fourteenth, fifteenth, and sixteenth cervical, the first and two middle dorsal, and a single præsaeral, which differs in the absence of an inferior spinous process. The total number of vertebræ seems to have been—

Cervical	16
Dorsal	7
Præsaeral	3
Sacral	17

The total length from the tip of the beak to the coccyx would be about 35 inches.

Ribs.

The third, fourth, and fifth ribs of the right side, the sixth and seventh of the left, and also the seventh sternal rib of the same side have been preserved. The first six ribs have well-pronounced unciniate processes, with a broad attachment 1 inch in length, that on the sixth rib being bent backwards so as to be almost parallel with the bone, and having a blunt expanded tip. The ribs are much compressed, with thin margins, having wavy irregular outlines. They are broad in the middle, and taper off towards each extremity when viewed laterally.

Humerus. (Plate LXV.)

The humerus has already been described, so far as it differs from the bone attributed to *Cnemiornis* by Professor Owen; and the femur, tibia, and tarso-metatarsæ agree so perfectly with Professor Owen's description as to require no further notice.

Metacarpus.

The metacarpal is made up of the first and second digits, which are completely fused at both extremities, leaving a narrow interspace for less than half the length of the bone. It resembles closely the corresponding bone in the Weka (*Ocydromus*), and bears about the same proportion as in that bird to the length of the humerus, being about two fifths of the length of that bone.

I should state that this bone has been found in several instances by Dr. Haast associated with fragments of a similar humerus, and rightly assigned by him to *Cnemiornis*. A fragmentary skull in the Colonial Museum, in which the posterior and nasal portions are wanting, found by Mr. Murison in Otago, must also be referred to this species.

As the leg-bones of this bird are not unfrequent in collections, especially from the most recent tertiary and cave-deposits from the interior of Otago, this bird must have been of common occurrence; and the foregoing details afford conclusive evidence that it was a gigantic bird, probably of similar habits to the Cape Barren Goose of Australia (*Cereopsis novæ hollandiæ*), but in which the power of flight had become obsolete.

Judging from the size of the pelvis, ribs, and sternum, the bulk of the body of this bird must have greatly exceeded in proportion any of its existing congeners, whilst its lower extremities were not less remarkable for their massive development. The height of its back above the ground probably exceeded 2 feet; and the length of its body from beak to tail must have been at least 3 feet. Mr. Mantell informs me that there is a traditional bird among the southern Maories answering to this description, named by them "Powhangai."

TABLE OF ADMEASUREMENTS.

	<i>Skull.</i>	
	in.	li.
Total length	4	5
Breadth (across paroccipitals)	2	0
" (" postfrontals)	2	0
" (" temporal fossa)	1	5
" (middle of upper mandible)	1	5
" (tip of upper mandible)	1	0
Length from condyle to præsphenoïd	2	1
" of palatines	1	4
" of præmaxillæ	1	5
" from nostril to tip of beak	1	0
" of nasal aperture	0	8
Width of " "	0	4
" of internasal septum	0	4
Occipital tuberosity to postnasal suture, following the curve	2	6
Occipital tuberosity to external basilar process	1	6
Length of vertical basilar area	0	3
" of horizontal basilar area	0	5
Width of horizontal basilar area	1	3

	<i>Pelvis.</i>	
	in.	li.
Total length	11	3
Length, antacetabular	4	1
Diameter of acetabulum	1	1
Height through do.	2	5
Antetrochanteric width	3	11
Length of mesial iliac suture	3	7
„ of postsacral area	4	7
Width of do.	1	2
„ of ischiatic notch	1	2
Length of do.	3	0
„ of pubic style	7	5
Width at middle	0	3
„ of anterior ilium	2	0
„ of posterior do.	1	0
Height of first sacral centrum	0	7
„ of neural canal and spine of do.	2	0

Sternum.

Extreme length by chord	7	0
„ „ by external surface	8	5
Extreme width by chord	4	0
„ „ by external surface	5	5
Length of costal margin	3	0
Width of do.	0	4
Length of coracoid grooves	1	5

Furcula.

Vertical chord	2	8
Interarticular breadth	2	8
Total exterior length	7	0
Average diameter	0	3
Diameter of articular process	0	5

	Humerus.		Femur.		Tibia.		Metatarsus.	
Length	6	2	6	2	11	0	5	5
Extreme breadth (proximal end)	1	5	2	3	2	7	1	6
Extreme breadth (distal end)	1	1	2	2	1	4	1	8
Circumference of middle of shaft	1	6	2	6	2	3	1	9

Metacarpal Bone.

Length	1	5
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TABLE OF WEIGHTS.

	grammes.	Same in Swan.
Skull with lower jaw	34·22	13·24
Sternum	64·87	17·13
Furcula	5·25	6·79

	grammes.	Same in Swan.
Pelvis	154.40	26.64
Humerus	26.32	27.39
Metacarpal	5.50	7.5
Femur	65.60	13.59
Tibia	115.45	20.66
Tarso-metatarses	50.80	11.65

2. Notes on the Habits of the Pipit of the Argentine Republic. By W. HENRY HUDSON, C.M.Z.S.

[Received September 15, 1873.]

With regard to *Anthus*, I know but one in this part of the world, namely the species called by naturalists (certainly for no good reason) *Anthus correndera*. But in plumage and language, possibly in size, it is variable. It is a common bird, widely and plentifully distributed on the pampas, found alike on marshy and dry grounds, but rare in the region of giant grasses. While abundant, it is also very evenly dispersed, each bird spending its life on a very circumscribed spot of earth. Those frequenting loose, moist, or wet grounds are of a yellow cream-colour mottled with fuscous and black; they have also two narrow parallel white stripes on the back. The birds inhabiting dry grounds are of a dirty white, marked with grey, pale fuscous, and other shades, and are very much paler than the former. They have not the white stripes on the back, and appear larger; but this appearance is probably due to a looser plumage. The most strongly marked pale and dark varieties may be found living within a few hundred yards of each other; and where moist and dry grounds meet, intermediate varieties occur. I have said varieties, but presume that variations would be the proper term, as the differences I have mentioned appear to be directly due to the physical conditions of life, and are not inherited.

A sketch of the manners, language, and habits of our *Anthus* may prove acceptable.

Azara's only reason for calling it "*Correndera*" is that he thought it resembled a bird he had seen of that name in Spain, and of which he had but a confused recollection. Its vernacular name "*Cachila*" is familiar to every man and child throughout the length and breadth of the vast country it inhabits.

The Cachilas are resident, living in couples all the year round. Several pairs frequent a small area, and sometimes unite in a desultory flock; but these social gatherings are not frequent. In the evening in all seasons, immediately after the sun disappears beneath the horizon, the Cachilas rise to a considerable height and fly wildly about, chirping for a few minutes before retiring to roost.

The Cachila, *Synallaxis anthoides*, and *Anumbius* (three species found in like situations) possess one habit in common.

When approached, they sometimes rise up three or four feet and hover in the air, chirping sharply, with breast towards the intruder.

But the Cachilas are the tamest of feathered creatures, and usually creep reluctantly away on their little pink feet when approached. If the pedestrian is a stranger to their habits, they easily delude him into attempting their capture with his hat, so little is their fear of of man.

To sing, the Cachila mounts upwards almost vertically, making at intervals a fluttering pause accompanied with a few hurried peculiar notes. When he has thus risen to a great height, but never beyond the sight as Azara says, he begins the descent slowly, the wings spread and inclining upwards; descending, he pours out a continuous impressive strain, ending with a falling inflection or with two or three throat-notes as the bird pauses, fluttering, in mid air, and then renewed successively, till, when the songster is within a few feet of the earth, he reascends as before to continue the performance. They sometimes sing on the ground; but their strains are then weak and desultory.

The Cachila raises two broods a year. The first brood is hatched about the middle of August—that is, from one to three months before other Passerine species begin laying. By anticipating the breeding-season, their early nests are exempted from the evil of parasitic eggs; but, on the other hand, frosty nights and cold storms are probably as fatal to their broods as the instinct of the *Molothrus*.

Their second brood is reared in December; and in that season a vast number of their nests contain parasitic eggs. The nest, placed within a slight depression in the earth under the grass, is sometimes dry and well lined with hair or fine roots, and sometimes composed of scanty materials loosely put together. During the solstitial season I have frequently found nests with frail roofs or shades built over them, the short and withered grass affording a poor protection from the meridian sun.

The eggs are four, oval, dirty white, spotted with dusky brown, often thickly mottled or entirely stained with the last colour.

The manners of this species, wherever I have observed it, are the same; it lives on the ground on open plains where the herbage and grass is short, and never perches on trees. The song varies in intonation in different regions.

3. Revision of the Genus *Protoponius*.

By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

[Received October 24, 1873.]

(Plate LXIX.)

The small Nymphalidian genus *Protoponius* has been long supposed to consist of only one extremely variable species, the varieties of which, however, are admirable copies of several species of Heliconoid Danainæ; but since there is not the slightest ground for arri-



ving at this improbable conclusion, I propose in the present paper to describe all the distinct and unnamed forms under their true designation of species.

Family NYMPHALIDÆ.

Genus PROTOGONIUS, Hübner.

1. *P. HIPPONA*.

Papilio hippona, Fabricius, Gen. Ins. p. 265. n. 280 (1776);
Donovan, Ins. Ind. pl. 35. fig. 1 (1800).

Papilio fabius, Cramer, Pap. Exot. i. pl. 90. figs. C, D (1779);
Stoll, Suppl. Cram. pl. 2. figs. 1a-d (1787).

Var. *Pará* (*Grahame*).

B.M.

Differs from the typical form in having the subanal spots of secondaries yellow instead of white, and the yellow band of primaries rather broader; mimics apparently *Melinæa idæ*, Felder.

2. *P. DRURII*, n. sp.

Papilio fabius, Drury, Ill. Ex. Ent. iii. pl. 16. figs. 1, 2 (1782).

Helicodes hippona, Doubleday, List Lep. Ins. Brit. Mus. i. p. 112 (1841).

Brazil.

B.M.

Parallels *Heliconius eucrate*.

3. *P. CECROPS*.

Protopogonius cecrops, Westwood and Hewitson, Gen. Diurn. Lepid. pl. 49. fig. 2 (1850).

Mexico (*Sallé*); Guatemala (*Salvin*); Nicaragua (*Delattre*);
Guayaquil.

B.M.

Mimics *Melinæa imitata* of Bates.

4. *P. QUADRIDENTATUS*, n. sp. (Plate LXIX. fig. 1.)

Allied to the preceding, but the apex of primaries not produced into an acute point and much less strongly falcated; the apical yellow spot obsolete; the subapical band broader, undivided, distinctly quadridentate externally; the basal tawny area wider; secondaries with less spatulate tail; external brown border narrower, its inner edge nearly straight; the submarginal spots replaced by minute pale ochreous points; wings below altogether more silky, all the yellow markings replaced by dull brown; central band of secondaries broader, with one dentate projection towards costa. Expanse of wings 3 inches 6 lines.

Bolivia (*Bridges*).

B.M.

Probably mimics *Melinæa zaneka*, Butler.

5. *P. BOGOTANUS*, n. sp.

Also allied to *P. cecrops*; form of the preceding species; primaries above with the apical half and a broad streak on inner margin black; basal half tawny, becoming yellow at inner edge of apical half; two spots (a large and a small) at apex, a moderately broad,

trifid, oblique subapical band (its lower extremity excised in front), a large spot almost touching the latter on second median interspace, and a small spot near margin on first median interspace, all yellow; secondaries tawny, with moderately broad external black-brown border, becoming obsolete at apex, but broadest at anal angle, and enclosing four ochreous oval spots; wings below very similar to *P. cecrops*, but duller in colour. Expanse of wings 3 inches 5 lines.

Bogota (*Stevens*).

B.M.

Mimics *Melinæa tachypetis* of Felder.

6. *P. TITHOREIDES*, n. sp.

Primaries above very similar to those of *P. cecrops* in general appearance, but with the apex less acuminate; the outer border of the tawny area yellowish; apical area exhibiting six yellow spots, one large trifid and oblique beyond the end of the cell, the others forming a submarginal series, the first, fourth, and fifth large, the others minute; secondaries with a continuous moderately broad black border round costal and outer margins; five submarginal yellow spots, the first at apex, the others running from discoidal nervure to anal angle; wings below as in preceding species, excepting that they are duller. Expanse of wings 3 inches 5 lines.

Bogota (*Stevens*).

B.M.

Mimics the New-Granadan form of *Tithorea megara*.

7. *P. OCHRACEUS*, n. sp. (Plate LXIX. fig. 3.)

Wings above ochraceous, including the spots on apical half of primaries; markings arranged as in *P. cecrops*, excepting that the third division of the oblique trifid band of primaries is almost divided in the centre into two parts, and that there are two large spots between it and external angle; the basal area of wings tinted with brown; secondaries with obtuse anal angle; four lunate whitish submarginal spots; wings below pale ochreous (brighter on secondaries), varied with pale lilacine and red-brown; secondaries with four distinct submarginal white spots, the three lower ones only divided by the nervures; central band red-brown; markings arranged as in *P. cecrops*. Expanse of wings 3 inches 5 lines.

Cayenne (*Becker*).

B.M.

A peculiarly coloured species; perhaps a mimic of an undescribed *Melinæa* which we have from Demerara, but not like enough to enable one to form a definite opinion respecting it.

8. *P. LILOPS*, n. sp.

Similar in general appearance to *P. cecrops*, but more nearly allied to *P. bogotanus*; primaries black-brown, with a broad tawny streak from base to near end of first median branch; a large, trifid, oblique, yellow patch beyond end of cell, and five large submarginal yellow spots; the first trifid, the fourth equal to the central division of the first and suboval, the remaining three much smaller, oval; secondaries tawny, with the external area from anal margin to end of second subcostal branch black-brown, and enclosing four yellow-edged white

spots; a yellow spot at apex; underside nearly as in preceding species. Expanse of wings 3 inches 8 lines.

Venezuela (*Dyson*).

B.M.

Mimics *Melinæa lilis* of Doubleday.

9. *P. DIVISUS*, n. sp.

Very like *P. bogotanus*; but the apical spots of primaries and the colouring of under surface are quite different; an elongate oblique trifold patch just beyond end of cell, a large blotch on second median interspace, and four small apical submarginal spots saffron-yellow; underside very similar to *P. cecrops*, but primaries without the large subapical white spot, and secondaries with the central band quite different in shape, widening gradually from submedian nervure to first subcostal branch and then suddenly narrower to costa. Expanse of wings 3 inches 6 lines.

E. Peru (*Degand*).

B.M.

Most nearly allied to *P. quadridentatus*; possibly a mimic of *Melinæa mælus* of Hewitson, but not a good imitation of it.

10. *P. CASTANEUS*, n. sp. (Plate LXIX. fig. 2.)

Primaries black, with a broad curved castaneous streak running from base to just below first median branch, where it terminates in a diffused subanal yellow spot; an elongate oblique trifold patch just beyond cell, the central part of costa, a large blotch on second median interspace, and four large apical submarginal spots, only separated by the nervures (the second much the largest), yellow; secondaries dark castaneous, with the outer margin from anal angle to apex dark brown and broad, excepting at apex; seven submarginal yellow spots reduced to points at apex; underside very similar to *P. hippona*, but central band as in preceding species. Expanse of wings 3 inches 5 lines.

Ega (*Bates*).

B.M.

Mimics *Tithorea egaensis*, Butler; it is most nearly allied to the preceding species.

11. *P. ALBINOTATUS*, n. sp. (Plate LXIX. fig. 4.)

Primaries above as in *P. tithoreides*, excepting that all the spots of apical half are white, and that there are six submarginal spots; secondaries as in *P. quadridentatus*; underside as in *P. tithoreides*. Expanse of wings 3 inches 5 lines.

Bogota (*Janson*).

B.M.

Mimics *Melinæa messatis* of Hewitson, and is not an uncommon insect in collections. Although very closely allied to *P. tithoreides*, I believe it to be distinct, from the fact of its mimicking a species of *Melinæa*; whilst *P. tithoreides* mimics a *Tithorea*. It is not very likely that the same species would produce imitations of two distinct genera, although from the small amount of change required (chiefly one of colour) I should think it not impossible.

4. On the Skulls of Japanese Seals, with the Description of a New Species, *Eumetopias elongatus*. By Dr. J. E. GRAY, F.R.S. &c.

[Received October 28, 1873.]

The British Museum has recently received from Mr. Arthur Adams's collection two specimens of skulls of Seals from Japan. The first is a young specimen of an Eared Seal, and was taken for, and believed to be the young of, a Seal of which I described and figured the skull in the P. Z. S. 1872, p. 738, figs. 2 and 3, which we received from Mr. Gerrard, jun., as coming from Japan, but which he now informs me was obtained from Mr. Arthur Adams's collection. It is evidently the young of the same species, though the older specimen, like the skulls which we have got of *Eumetopias stelleri* from California, have a space between the fourth and sixth teeth, as if a tooth were absent, as I observed in my description of the genus. The young skull now received has a fifth tooth present, and chiefly differs from the genus *Gypsophoca* from the South Seas in the fifth and sixth teeth not being so distinctly behind the front part of the zygomatic arch as in that genus.

The reception of the young skull from Japan makes it very doubtful if the species of *Eumetopias* from that coast is the same as the true *Eumetopias stelleri* from the N.W. coast of America; for both the old and young skulls are very much narrower, compared with their length, and especially the skull of the elder animal. The orbits are smaller. The skulls of the young animals are the most distinct; for the skull of the young animal from Japan is solid and much more developed than the much larger young skull from California, in the Museum, figured in the P. Z. S. 1872, p. 740, figs. 4 and 5, where the great width of the zygomatic arch and the very large size of the orbit are most striking, and the skull is very light and thin, and, like the teeth, very imperfectly developed. These differences are too great, I think, to be sexual; therefore I am inclined to think that there are two species of the genus *Eumetopias*.

1. EUMETOPIAS STELLERI.

Eumetopias stelleri, Gray, Suppl. Cat. Seals and Whales, p. 30; P. Z. S. 1872, p. 740, figs. 4 & 5 (skull, young); Allen, Bull. Comp. Anat. and Zool. vol. ii. p. 44, t. 1 & 2 (skulls).

Arctocephalus monteriensis, Gray, P. Z. S. 1859, p. 358, t. 72 (skull).

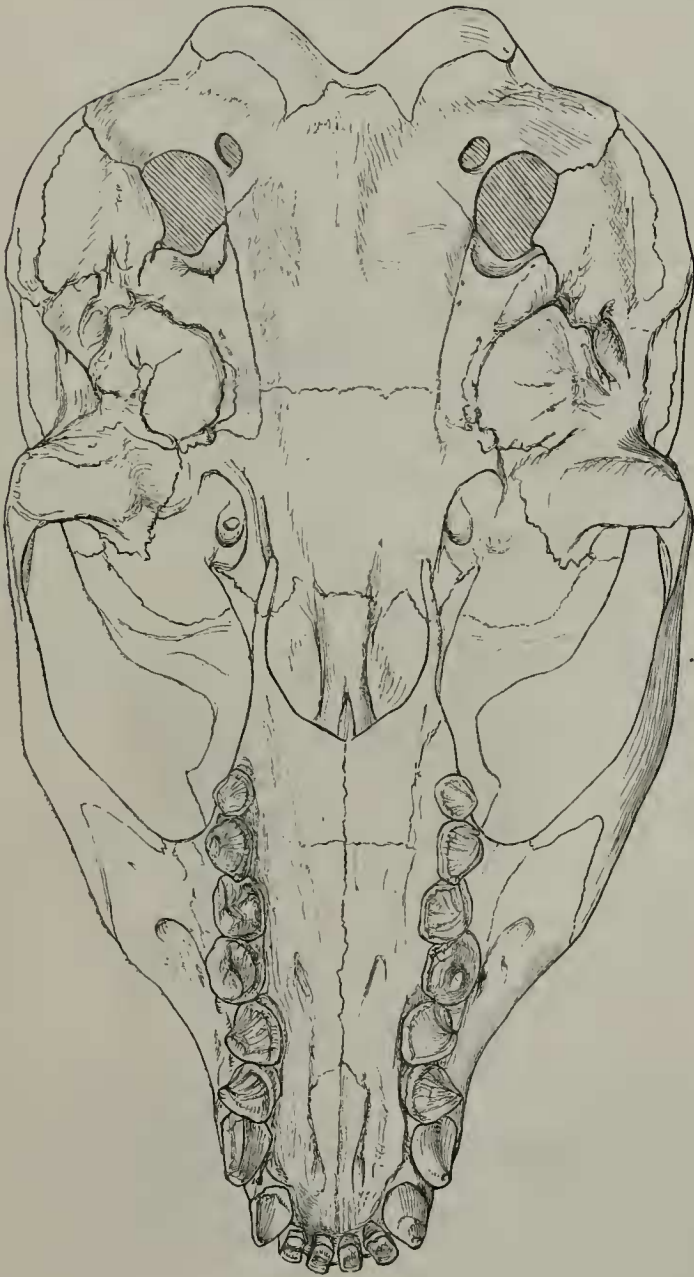
A. californianus, Gray, Cat. Seals and Whales, 1866, p. 51 (skull only of young).

N.W. Coast of America; California; Behring's Straits.

2. EUMETOPIAS ELONGATUS. (Figs. 1 and 2, pp. 777, 778.)

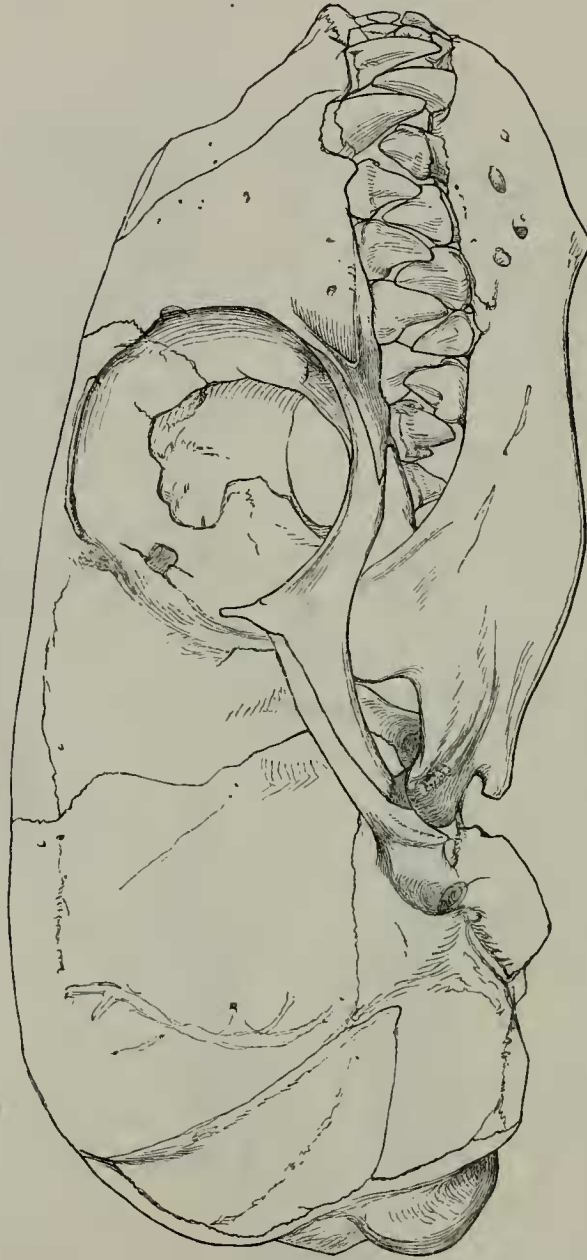
E. stelleri, Gray, P. Z. S. 1872, p. 738, figs. 2 & 3 (skull, nearly adult).

Fig. 1.



Skull of *Eumetopias elongatus*, jr.

Fig. 2.

Skull of *Eumetopius elongatus*, jr.

Otaria stelleri, Schlegel, Faun. Jap. t. 22. figs. 5 & 6?
Japan (*Arthur Adams*).

The skull figured by Schlegel has the fifth upper grinder, like the young skull from Japan, which made me think at one time that it was a specimen of *Gypsophoca*.

The second skull obtained from Mr. A. Adams is named "*Halichærus barbatus*," and said to come from Tondonasiri, Japan. It is not a *Halichærus*, but is very like the older skull of *Halicyon richardi* in the British Museum, which we received from the Columbia river in British Columbia; and I am inclined for the present to regard it as the skull of that species. The skull is very like it in size and form and proportion of the bones; but it is much thicker and more solid, which may be the effect of age.

The lower jaw is so much thickened, especially on the inner side, that the inflexed lower margin which I considered characteristic of the genus *Halicyon* is only marked by a slight keel on the lower edge; but still it is sufficiently marked to distinguish this genus from the Seals of the North Atlantic.

The *Sea-bears* may be divided according to the position and number of their grinders:—

I. *Upper grinders* 6 . 6, *the hinder behind the front part of the zygomatic arch; the fifth grinder of the upper jaw sometimes absent, but its place is left between the fourth and sixth.*

* Skull elongate; face long; under-fur sparse or none. PHASCOARCTUS.

** Skull broad; face short; under-fur thick. CALLIRHINUS, ARCTOCEPHALUS, EUMETOPIAS, GYPSOPHOCA, ARCTOPHOCA.

II. *Upper grinders* 5 . 5, *the last before the hinder edge of the front of the zygomatic arch.* Zalophus, Neophoca.

5. On Peruvian Birds collected by Mr. Whitely. By P. L. SCLATER, M.A., Ph.D., F.R.S. Part VII.*

[Received October 31, 1873.]

The present collection of Mr. Whitely contains fifty-six skins, referable to thirty-nine species. It is from the same district of the Andes of Cuzco as those last reported upon, but nevertheless contains several species of high interest and five apparently new to science.

The following is a list of the species and of the localities in which they were obtained, Mr. Whitely having adopted the admirable plan of affixing a small ticket to each specimen, on which the exact date and locality where it was procured and the contents of its stomach are recorded.

The nomenclature is that of the 'Nomenclator Avium Neotropicalium.'

* Continued from p. 187.

- *1. *Turdus serranus*. Huasampilla.
- *2. *Thryophilus fulvus*, sp. nov. Huasampilla.
- 3. *Troglodytes tessellatus*. Paucartambo.
- *4. — *solstitialis*. Huasampilla.
- 5. *Diglossa brunneiventris*. Paucartambo.
- 6. *Conirostrum cinereum*. Paucartambo.
- 7. *Euphonia xanthogastra*. Cosnipata.
- 8. *Calliste yeni*. Cosnipata.
- 9. *Buthraupis cucullata*. Huasampilla.
- 10. *Phoenicothera carmioli*. Cosnipata.
- 11. *Saltator laticlavius*. Paucartambo.
- 12. *Poospiza cæsar*. Paucartambo.
- 13. *Phrygilus atriceps*. Paucartambo.
- 14. — *fruticeti*. Paucartambo.
- 15. *Catamenia analis*. Paucartambo.
- *16. *Cassicus chrysonotus*. Huasampilla.
- 17. *Cyanocitta viridicyanea*. Huasampilla.
- 18. *Agriornis insolens*. Paucartambo.
- *19. *Ochthæca rufipectoralis*. Ceachupata.
- 20. — *leucophrys*. Paucartambo.
- *21. *Todirostrum pulchellum*, sp. nov. Cosnipata.
- 22. *Anæretes albocristatus*. Paucartambo.
- *23. *Tyranniscus viridissimus*, sp. nov. Cosnipata.
- *24. *Myiobius aureiventris*, sp. nov. Cosnipata.
- 25. — *pulcher*. Huasampilla.
- 26. — *nævius*. Cosnipata.
- *27. *Pipra cæruleicapilla*. Cosnipata.
- 28. *Pipreola melanolæma*. Huasampilla.
- *29. *Cinclodes bifasciatus*. Paucartambo.
- 30. *Xiphocolaptes promeropirhynchus*. Huasampilla.
- 31. *Formicivora bicolor*, Pelzeln. Cosnipata.
- *32. *Grallaria erythroleuca*, sp. nov. Huasampilla.
- 33. — *rufula*. Ceachupata.
- 34. *Stenopsis æquicaudata*. Ceachupata.
- 35. *Chloronerypes hilaris*. Huasampilla.
- 36. *Hypoxanthus rivolii*. Huasampilla.
- *37. *Capito versicolor*. San Antonio.
- *38. *Urochroma*, sp. inc. Paucartambo.
- *39. *Peristera mondetoura*. Huasampilla.
- *40. *Geotrygon frenata*. Huasampilla.
- *41. *Odontophorus balliviani*. Huasampilla.
- 42. *Penelope sclateri*, G. R. Gray. Huasampilla.

The following notes refer to the species marked with an asterisk :—

1. *TURDUS SERRANUS*, Tsch. F. P. *Aves*, p. 186; Scl. et Salv. P. Z. S. 1870, p. 783.

I am pleased to find an adult and a young male of this species in Mr. Whitely's collection, our identification of the Peruvian bird